

## PRESSURE SENSOR

### ABSTRACT OF THE DISCLOSURE

[0052] A pressure gauge includes a diaphragm having a substantially rigid outer portion and a displaceable inner portion that displaces in response to a pressure difference between first and second sides of the diaphragm. The pressure gauge further includes a sensor located proximate to the diaphragm and adapted to sense the displacement of the diaphragm inner portion. The pressure gauge further includes a monitor and control system coupled to the sensor (wired or wireless), and adapted to determine the pressure difference from the displacement of the diaphragm. The sensor and the monitor and control system can be implemented with one or more optical sensing designs, capacitive sensing designs, or other devices used to measure sub-micron displacements. For low pressure applications, such as lithography applications, the diaphragm is sensitive to pressure changes in a range of approximately 0.1 to 0.5 inches of water. The diaphragm and sensor have a relatively high bandwidth and can thus be implemented in relatively high speed applications. The invention can be implemented in, for example, lithography proximity sensing equipment and lithography topographical mapping equipment.

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